412-664-245 Taesday, 12/12/2006 8:57:05 AM Jean-Luc Menard **Process Sheet** : INITIAL PROTOTYPE TEMPLATE : CC-DAR01 Dart Aerospace Ltd. **Drawing Name** Customer Job Number : 00085A **Estimate Number** : 10068 : INITIAL PROTOTYPE P.O. Number : N/A **Part Number** S.O. No. : NA : 12/12/2006 **Drawing Number** . NIA This Issue : LG0006 Prsht Rev. : NC Project Number : N) 1 : R&D GENERAL : 11/9/2006 **Drawing Revision** First Issue Material : 00084A : NIA **Previous Run** : 10/10/2006 1 Um: Each **Due Date** Qty: Written By Checked & Approved By Comment : Project # Description: **Additional Product** Job Number: Seq. #: **Machine Or Operation:** Description: MFG ENGINEERING 1.0 MFG ENGINEERING Comment: MFG ENGINEERING Manufacture Prototype as per Dwg's Supplied By Engineering -MATERIA D6009-129 BATCH: 1825668 Z - TURN ASPER Duy (rev. A) BG 06.12.13 BG 06.12.13 (2) 3. QC2 MS 06/12/20 A 4 - QCB. (rev. A) 5 - Bend as per Dwg. install Support as per Deug rintall Abasian Styrs & Dava challing stelles as per Dava 5A-CHEMICAL CONVERSION COAT PER UND OSI OUS 4.1 106-12-20 PURCHASING 2.0 PG Comment: PURCHASING Attached certificate of conformity for raw material and subcomponents use for this w/o

Date: Tuesday, 12/12/2006 8:57:05 AM
User: Jean-Luc Menard

Process Sheet

Drawing Name: INITIAL PROTOTYPE TEMPLATE

Job Number: 00085A

Part Number: INITIAL PROTOTYPE

Job Number:

Seq. #:

Machine Or Operation:

Description:

3.0

PACKAGING 1

* Customer: CC-DAR01 Dart Aerospace Ltd.

PACKAGING RESOURCE #1

NA

Comment: PACKAGING

Identify "FOR ENGINEERING USE ONLY" and distribute to engineering.

4.0

ENGINEERING 1

ENGINEERING RESOURCE #1



Comment: ENGINEERING RESOURCE #1

Approval of project manager

06.12.20

5.0 QC

FINAL INSPECTIONW/O RELEASI



06,1220

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



E TO	SSUE
VOALL	issue
PRELIMINATION	,

DESIG	if	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHEC	KED	APPROVED	DRAWING NO.	REV. C
l			D412-664-245 SHEET	1 OF 3
DATE	•		TITLE	SCALE
06.1	2.01		CROSSTUBE ASS'Y (412CF L-N AFT) NTS
Α		06.12.01	NEW ISSUE	

PARTS LIST:

Qty	Part Number	Description
X	D412-664-245	CROSSTUBE ASSEMBLY (412CF LOW-NARROW AFT)
1 _	D6009-129	CROSSTUBE
2	D2732-058	RUBBER CUSHION
1	D2896-1	SUPPORT
2	D2856-600-1009	ABRASION STRIP
4	MS21920-28	CLAMP
2	MS21920-32	CLAMP
2	D3189-1	CHAFING SHIELD
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6009-129

FINISHED LENGTH = 123.59±0.020 (BEFORE BENDING/TRIMMING)

3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

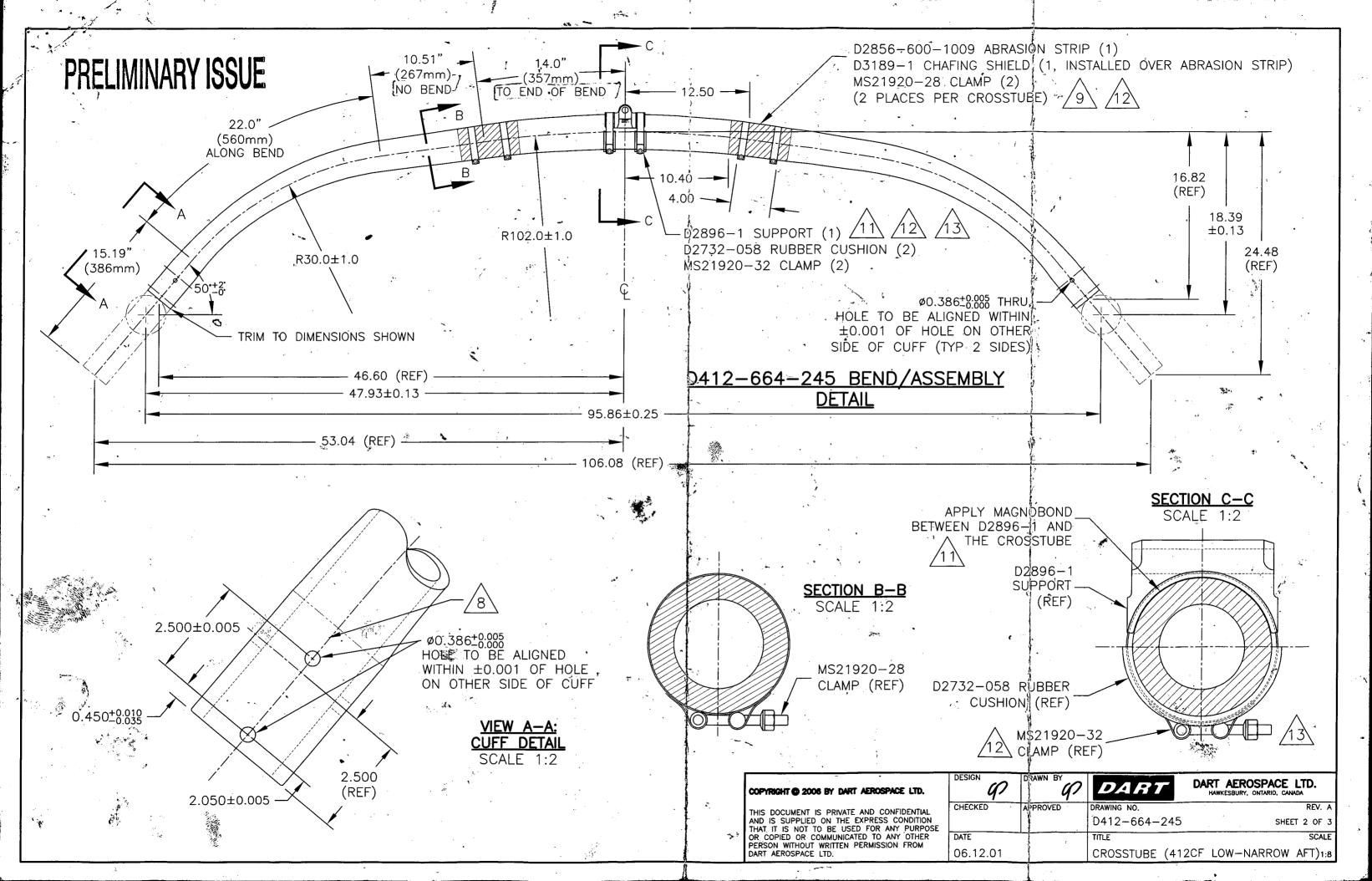
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

- PAINT OUTSIDE PER DART 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
 5) RUN-OFF PART, BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-600-1009 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR PACKAGING.
- 12) INSTALL MS21920-32 CLAMPS WITH D2732-058 RUBBER CUSHIONS TO SECURE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
- 13) TORQUE CLAMPS 80 TO 100 IN-LB.

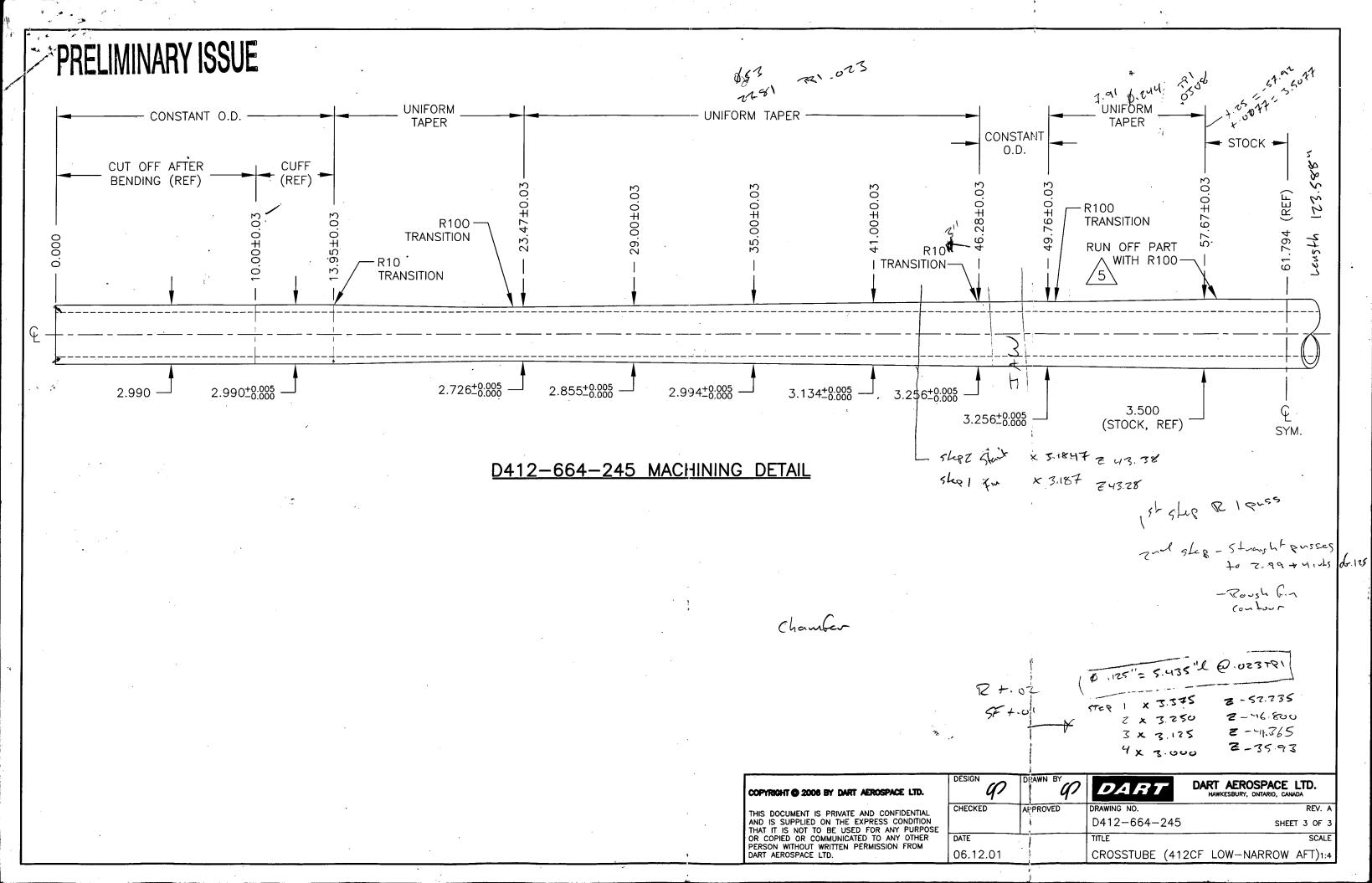
Copyright @ 2006 by DART AEROSPACE LTD

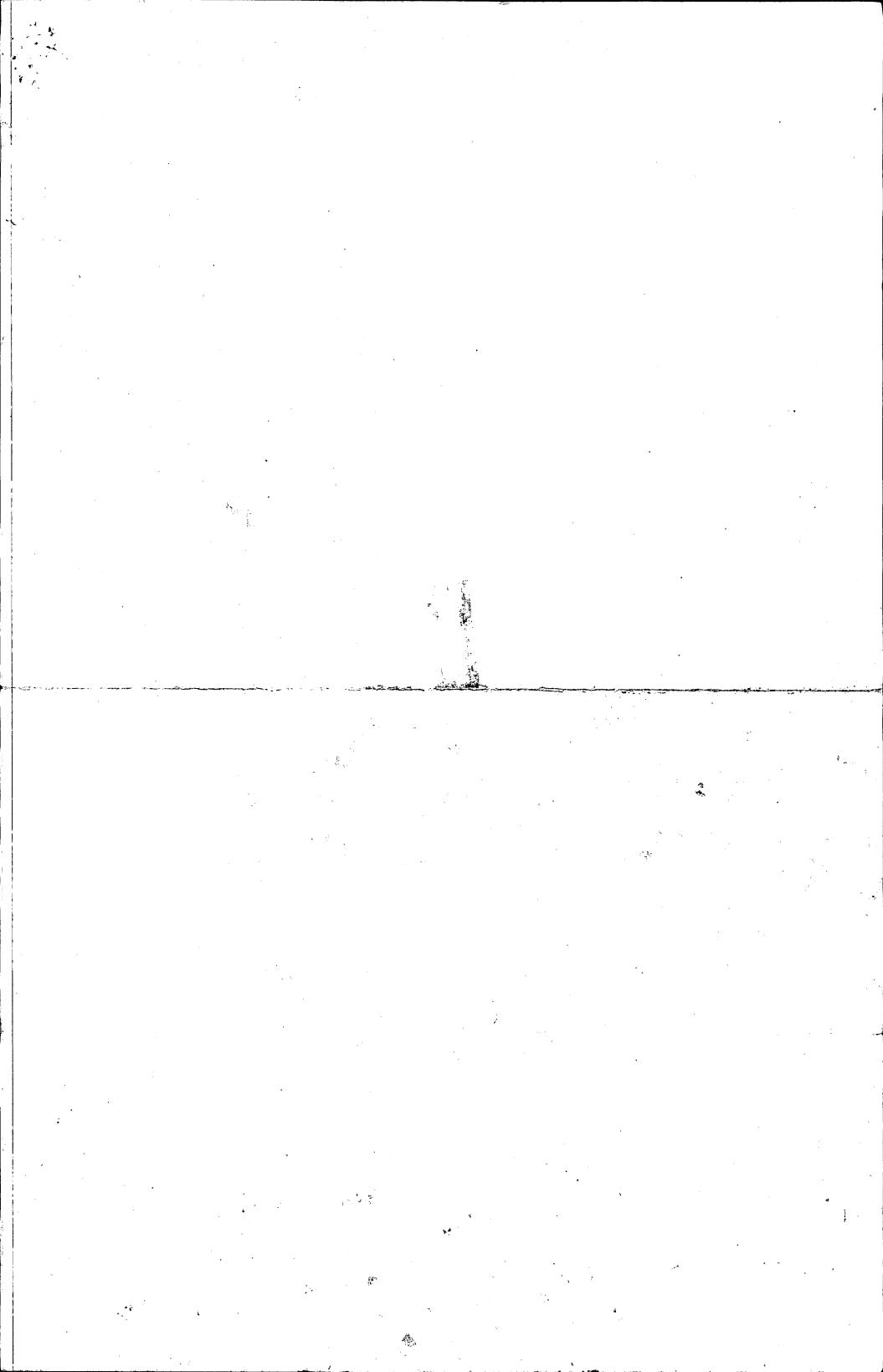
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DART AEROSPACE LTD	Work Order:		
		7412-664-245	
Description: Crosstube Assembly (AS359/355 High Aft)	Part Number:	D350-748=241	
		· · · · · · · · · · · · · · · · · · ·	
Inspection Dwg: D350-748-241 Rev: C		Page 1 of 1	

FIRST ARTICLE INSPECTION CHECKLIST

X First Article Prototype

In Dra	spection Sheet awing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
	2.990	+.005	2.992	/	*		
	7.726	11	2.731				
	2.855	11	2.859				
	2.994	~	2.996				
	3 134	``	3.136			4	
	3 256	N g	3.760			• .	
E A	3.756	11	3.260				
SIDE	3506	STOCK REF	3.487				
0)			T				
			-t	om 3.4	87 10	3.498	.
				,			
					:) Temps
							÷
	7.990	+.005	2.993				
	2.726	11	2231				
	7-855	~1	2.860	, ,			A STATE OF THE STA
	7.994	4	2.997				C
	3.134	~	3.137				
	3.256	~	3.231				
ш СО	3 256	~	3.761				
SIDE	VS.	_	3.761				
6,							
	123.588	±.02	173.588	_			
Ì				11170-11170			
	,						1

٠,		,		
	Measured by:	Audited by: M	Prototype Approval:	NIA
	Date: 06.17.13	Date: 06/12/14	Date:	CENTA19

Rev	Date	Change		Revised by	Approved
Α		New Issue	(P/O D350-748-201)	KJ/JLM	

Many May Co 3

: CROSSTUBE EXTRUSION (412 AFT)



Monday, 1/30/2006 3:43:52 PM

Kim Johnston

Process Sheet

Customer **Job Number** : CU-DAR001 Dart Helicopters Services

: 25668

Estimate Number

P.O. Number

Previous Run

Written By

Comment

: 10030 :NA

This Issue

: 1/30/2006

Prsht Rev. First Issue

Checked & Approved By

: NC : NIA

S.O. No. : NIA

Type

: LANDING GEAR

New Issue SM

Drawing Name

Part Number

: D6009129

Drawing Number Project Number

: D6009 REV A : N/A

Drawing Revision

MU: Material

: 6/1/2006 **Due Date**

Qty:

20 Um:

REFERENCE ONLY

Each

Additional Product

Job Number:



Seq. #:

1.0

Machine Or Operation:

PURCHASING



Description:



Comment: PURCHASING

PG

Issue P/0: 00000505 a) Order as per Dwg D6009

b) Material: 3.500 x 0.625 wall 7075-T6/T6511 (WW-T-700/7 or

QQ-A-225/9 or QQ-A-200/11) seamless

aluminum tube

- c) Minimum ultimate tensile strength = 77 ksi
- d) Minimum tensile yield strength = 66 ksi
- e) Tolerance are per ASTM B210 (see details on Dwg D6009)
- f) Material certification required

2.0

PACKAGING 1

PACKAGING RESOURCE #1









Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure material certification is attached

CZ04128104



3.0

QC6

DIMENSIONAL CHECK





Comment: DIMENSIONAL CHECK

Ensure Material certification comply to Dwg D

06/06/30



4.0

HAND FINISHING1

HAND FINISHING RESOURCE #

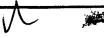


Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1







Monday, 1/30/2006 3:43:53 PM Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: CROSSTUBE EXTRUSION (412 AFT)

Job Number: 25668

Part Number: D6009129

Job Number:



REFERENCE ONLY

Seq. #:

Machine Or Operation:

Description:

5.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock Location:

06/06/30

6.0 DC DOCUMENT CONTROL

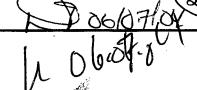


Comment: DOCUMENT CONTROL

Inspection Level 21

Job Completion







Abnahmeprüfzeugnis 3.1 - EN 10204:2004

Inspection Certificate 3.1 - EN 10204:2004 | Certificat de Reception 3.1- EN 10204:2004

Kunde: Client:

Dart Aerospace Ltd.

1270 Aberdeen Street

K6A1KZ

Hawkesbury, ON

Canada

Zeuanisnummer:

363/06

Cert No.: / No. du certificat:

Bestellnummer: Order No. / No. de commande

Our Reference/Notre Reference:

PO00000505

Produkt:

Rohre nahtlos gepresst Tubes seamless extruded

Auftrag:

17486/9

Product / Produit: Spezifikation:

-; AMS - QQ - A - 200/11E; -; -; -

Specification:

Werkstoff:

7075

Zustand: Temper/État T 6511

REFERENCE ONLY

Alloy/Alliage: **Abmessung**

3,500 INCH

x 2,250 INCH x 0,625 INCH x 129,000 INCH

Size / Dimension

D6009-129 3.500 X 0.625 X 129

Kennzeichnung Marking/Marquage:

ALUnna-Cert No.363/06-7075-T6511-Cast No.80117-QQA-200/11E-3.500" OD X 0.625"Wall-Heat No.421/04-

Lot17486/9-1-P.O.00000505

lbs

Lieferuna Pelivered Material / Matérial délivre:

22

1629

Chemical Analysis / analyse chimique 1 Chemische Analyse

1. U//C	ب ان ان						, ,							
		Si	Fe	Cu	Mn	Mg	Cr	Zn	Tì	Pb	Zr	Bi	Sn	Ni
Charge/	min.			1,2		2,1	0,18	5,1						
Cast No.	max.	0,40	0,50	2,0	0,30	2,9	0,28	6,1	0,20			<u> </u>		
80117		0,07	0,15	1,53	0,04	2,48	0,19	5,87	0,04	<0,05				

Elements without indication < 0,01 %

Mechanische Eigenschaften

Mechanical Properties / Valeurs Mécaniques

Anforderungen	tensile	yield	elongation	elongation	Hardness	Heat No.	
Requirements	(Rm) ksi	(Rp0,2) ksi	2" %	A %	HB		
min. max.	77,0	66,0					
1	87,580	80,910	11,5	11,5	179	421/04 - 22 pcs.	
2	87,145	80,330	10,5	10,5	170		
3	87,000	79,895	10,5	10,5	166		
4	87,290	80,475	10,0	10,0	180		
		r I					

Ergebnis der Prüfungen:

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

Test results: Resultats:

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order Nous confirmons que la livraison a été controlée et correspond avec les conventions faites à la réception de la commande



ALUnna



confirmation

17486

page:

3.03.2006

date: customer

40980

face Finish max. RMS 25

folerances per ASTM B210 / drawing D6006

Tubes protected with corrosion protective oil

Tubes line marked

Packing:

seaworthy wooden cases

delivery USD quantity unitprice USD unit value June 22, 2006 8.141,04 678,42 РC 12,000 PC 800

AWU article: 16539 / Tariff no. 76082091

Customer article: D6008-180 3.250 X 0.438 X 180

product: TUBES / seamless extruded / EN AW-7075 / round

condition: T 6511 / AMS-QQ-A-200/11E

outer diameter: 3,250 INCH Tol. +0,016 -0,016 +0,008 -0,008 tol.for mean OD

2,374 INCH inner diameter:

-0,043 0,438 INCH Tol. +0,043 wall thickness:

+0,125 fixed length 180,000 INCH Tol.

test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455 straightness 0,01 INCH / 1 FEET / RMS outer 25 tol. on quantity +10 %. -10 % 3.250" OD 0.438" Wall, 180" lengths Part Number D6008-180 crosstube Surface Finish max. RMS 25

Tolerances per ASTM B210 / drawing D6008 Tubes protected with corrosion protective oil

Tubes line marked

Packing:

seaworthy wooden cases

item	quantity	unitpr	rice USD	unit	value	USD	delivery	
009	20 000) PC	790.18	PC	15.8	303,60	June 15,	2006

AWU article: 17956 / Tariff no. 76082091

Customer article: D6009-129 3.500 X 0.625 X 129

product: TUBES / seamless extruded / EN AW-7075 / round

condition: T 6511 / AMS-QQ-A-200/11E

+0,016 -0,016 3,500 INCH Tol. outer diameter: 2,250 INCH inner diameter: +0,063 -0,063 0,625 INCH Tol. wall thickness: -0,020 +0,020 tol.for mean wall +0,188 129,000 INCH Tol. fixed length

test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455 straightness 0,01 INCH / 1 FEET / RMS outer 25 tol. on quantity +10 % -10 %



confirmation

17486

page: date:

3.03.2006

customer 40980

urface Finish max. RMS 25

Tolerances per ASTM B210 / drawing D6006

Tubes protected with corrosion protective oil

Tubes line marked

Packing:

seaworthy wooden cases

item	quantity	unitpr	ice USD	unit	value	USD	delivery
008	12,000	PC	678,42	PC	8.14	11,04	June 22, 2006

AWU article: 16539 / Tariff no. 76082091

Customer article: D6008-180 3.250 X 0.438 X 180

product: TUBES / seamless extruded / EN AW-7075 / round

condition: T 6511 / AMS-QQ-A-200/11E

3,250 INCH Tol. +0,016 -0,016 outer diameter: +0,008 -0,008 tol.for mean OD 2,374 INCH inner diameter: 0,438 INCH Tol. +0,043 180,000 INCH Tol. +0,125 -0,043 wall thickness:

fixed length

test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455 straightness 0,01 INCH / 1 FEET / RMS outer 25 tol. on quantity +10 % -10 % 3.250" OD 0.438" Wall, 180" lengths

Part Number D6008-180 crosstube

Surface Finish max. RMS 25

Tolerances per ASTM B210 / drawing D6008

Tubes protected with corrosion protective oil

Tubes line marked

Packing:

seaworthy wooden cases

item	quantity	unitpr	ice USD	unit	valụe	USD	delivery	
009	20 000) PC	790.18	PC	15.	803,60	June 15, 2006	

AWU article: 17956 / Tariff no. 76082091

Customer article: D6009-129 3.500 X 0.625 X 129

product: TUBES / seamless extruded / EN AW-7075 / round

condition: T 6511 / AMS-QQ-A-200/11E

-0,016 +0,016 3,500 INCH Tol. outer diameter: 2,250 INCH inner diameter:

+0,063 -0,063 0,625 INCH Tol. wall thickness: +0,020 -0,020 tol.for mean wall

+0,188 129,000 INCH Tol. fixed length

test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455 straightness 0,01 INCH / 1 FEET / RMS outer 25 tol. on quantity +10 % -10 %



f confirmation

17486

page: 3.03.2006 date: customer 40980

art Number D6009-129 crosstube Surface Finish max. RMS 25 Tolerances per ASTM B210 Straightness 0.010" deviation /12" length Outside surface: max. defects up to 0.005" (longitudinally) Min. ultimate tensile strength 77 ksi Min. yield strength 66 ksi Tubes protected with corrosion protective oil Tubes line marked Packing list, Inspection certificate seaworthy wooden cases Packing:

terms of delivery:

DDP(Delivered, Duty, Paid)

Terms of payment: 30 days after date of delivery

delivery address:

Main Finished Goods Location Dart Aerospace Ltd.

1270 Aberdeen Street

CDN Hawkesbury, ONT, K6A1K7

delivery note

Packing:

25234

page: date: 29.05.2006 40980 customer

```
net kgs
       quantity unit
item
          13,000
008
AWU article: 16539 / Tariff no. 76082091
Customer article: D6008-180 3.250 X 0.438 X 180
product: TUBES / seamless extruded / EN AW-7075 / round
condition: T 6511 / AMS-QQ-A-200/11E
                                                                 -0,016
                                                        +0,016
    outer diameter:
                             3,250 INCH Tol.
                                                        +0,008
                                                                 -0,008
    tol.for mean OD
                             2,374 INCH
    inner diameter:
                                                                 -0,043
                                                        +0,043
                             0,438 INCH Tol.
    wall thickness:
                                                        +0,125
                            180,000 INCH Tol.
    fixed length
test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455
straightness 0,01 INCH / 1 FEET / RMS outer 25
tol. on quantity +10 % -10 %
3.250" OD 0.438" Wall, 180" lengths
Part Number D6008-180 crosstube
Surface Finish max. RMS 25
Tolerances per ASTM B210 / drawing D6008
Tubes protected with corrosion protective oil
Tubes line marked
                          seaworthy wooden cases
Packing:
                            1
number of packages:
number of pieces:
                           13
       quantity unit
                         net kgs
item
009
           22,000
AWU article: 17956 / Tariff no. 76082091
```

Customer article: D6009-129 3.500 X 0.625 X 129 product: TUBES / seamless extruded / EN AW-7075 / round condition: T 6511 / AMS-QQ-A-200/11E +0,016 -0,016 3,500 INCH Tol. outer diameter: 2,250 INCH inner diameter: +0,063 -0,063 0,625 INCH Tol. wall thickness: -0,020 +0,020 tol.for mean wall +0,188 129,000 INCH Tol. fixed length test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455 straightness 0,01 INCH / 1 FEET / RMS outer 25 tol. on quantity +10 % -10 %3.500" OD 0.625" Wall, 129" lengths Part Number D6009-129 crosstube Surface Finish max. RMS 25 Tolerances per ASTM B210 Straightness 0.010" deviation /12" length Outside surface: max. defects up to 0.005" (longitudinally) Min. ultimate tensile strength 77 ksi Min. yield strength 66 ksi Tubes protected with corrosion protective oil Tubes line marked Packing list, Inspection certificate seaworthy wooden cases

200

delivery note

Packing:

25234

page: 5
date: 29.05.2006
customer 40980

quantity unit net kgs item 13,000 800 AWU article: 16539 / Tariff no. 76082091 Customer article: D6008-180 3.250 X 0.438 X 180 product: TUBES / seamless extruded / EN AW-7075 / round condition: T 6511 / AMS-QQ-A-200/11E -0,016 +0,016 3,250 INCH Tol. outer diameter: +0,008 -0,008 tol.for mean OD 2,374 INCH inner diameter: -0,043 +0,043 0,438 INCH Tol. wall thickness: +0,125 180,000 INCH Tol. fixed length test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455 straightness 0,01 INCH / 1 FEET / RMS outer 25 tol. on quantity +10 % -10 %3.250" OD 0.438" Wall, 180" lengths Part Number D6008-180 crosstube Surface Finish max. RMS 25 Tolerances per ASTM B210 / drawing D6008 Tubes protected with corrosion protective oil Tubes line marked seaworthy wooden cases Packing: 1 number of packages: 13 number of pieces: quantity unit net kgs item 22,000 AWU article: 17956 / Tariff no. 76082091 Customer article: D6009-129 3.500 X 0.625 X 129 product: TUBES / seamless extruded / EN AW-7075 / round condition: T 6511 / AMS-QQ-A-200/11E -0,016 +0,016 3,500 INCH Tol. outer diameter: 2,250 INCH inner diameter: -0,063 +0,063 0,625 INCH Tol. wall thickness: +0,020 -0,020 tol.for mean wall +0,188 129,000 INCH Tol. fixed length test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455 straightness 0,01 INCH / 1 FEET / RMS outer 25 tol. on quantity +10 % -10 % 3.500" OD 0.625" Wall, 129" lengths Part Number D6009-129 crosstube Surface Finish max. RMS 25 Tolerances per ASTM B210 Straightness 0.010" deviation /12" length Outside surface: max. defects up to 0.005" (longitudinally) Min. ultimate tensile strength 77 ksi Min. yield strength 66 ksi Tubes protected with corrosion protective oil Tubes line marked Packing list, Inspection certificate

seaworthy wooden cases



delivery note

25234

page:

date: customer

29.05.2006 40980

number of packages:

1

number of pieces:

Terms of payment: terms of delivery: 30 days after date of delivery

DDP(Delivered, Duty, Paid)

weight:

gross

4659,500

net

3579,000

Packstücke

customer address:

DART AEROSPACE LTD. 1270 Aberdeen Street

CDN K6A 1K7 HAWKESBURY

Soll a

... 00085A

CFULA

Crosstube Bend Dimension Sheet

16.9 A ANGLE 4/90	4375 46, 23 1/2 SPAN	53 46.685 1/2 SPAN SPAN	ANGLE (6,95) 49.5
PART NUMBER:		6-12-1	9
BATCH NUMBER:		6-10	
DRAWING:	REVISION:		
H:	,		
1/2 SPAN:		QC 15:	
TOTAL SPAN:		DATE:	
ANGLE:		QTY:	

Job number: 00085A Estimate number: 10068

STEP 6. INSTALL SUPPORTS PER DUG :

D2896-1 SUPPORT B/N B27266

MS21920-30 CLAMP B/N M101568

D21828-058-058-058 CUSHION B/N 28042 B

STEP 7: INSTALL ABRASION STRIPS AND CHAFING SHIELD AS PER DWG:

D2856-600-1009 ABBASION STRIP BIN B26650
D3189-1 CHAFING SHIELD BIN B27190
MS21920-28 CLAMP BIN M101684

IT 06-12-20

DEVIATIONS &

- MSZ1920-30 INSTEAD OF MSZ1920-32
- DZ182B INSTEAD OF DZ732-058
- No prime & paint

- ANGLE OF BENDS ARE 490 4950 INSTEAD OF 500 +2

- One half span is undertolerance (1415 15 CONSERVATIVE FOR DEFLECTION TEST)

- Oty(2) \$0,386 holes not drilled (for Ball saddles)

NOT REQUID FOR THE TEST,

ACCEPTABLE DEMATIONS For TEST

H 06.12.20